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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/006,704      | 12/10/2001  | Shane J. Trapp       | M4065.0369/P369-A   | 3229             |

24998 7590 10/20/2005

DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP  
2101 L Street, NW  
Washington, DC 20037

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| EXAMINER |
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UMEZ ERONINI, LYNETTE T

|          |              |
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| ART UNIT | PAPER NUMBER |
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1765

DATE MAILED: 10/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                         |                 |  |
|------------------------------|-------------------------|-----------------|--|
| <b>Office Action Summary</b> | Application No.         | Applicant(s)    |  |
|                              | 10/006,704              | TRAPP, SHANE J. |  |
|                              | Examiner                | Art Unit        |  |
|                              | Lynette T. Umez-Eronini | 1765            |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on 03 August 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 26-32, 71 and 77 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-32, 71 and 77 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

This communication is response to Applicant's Remarks in Amendment filed 8/3/2005, which were persuasive in showing the prior art of record failed to teach an etchant mixture consisting essentially of at least one fluorocarbon and ammonia. Hence, a new Office Action is presented.

### ***Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 26-32, 71, and 77 are rejected under 35 U.S.C. 102(e) as being anticipated by Smith et al. (US 6,277,733 B1).

Smith teaches, "... the wafer would be subjected to a plasma which contains H<sub>2</sub> (deuterium or a hydrogen-containing gas, such as ammonia, can be used in place of H<sub>2</sub>) and CF<sub>4</sub>, (or other fluorocarbon, such as C<sub>2</sub>F<sub>6</sub>, CHF<sub>3</sub>, CH<sub>2</sub>F<sub>2</sub> or other fluorine-containing hydrocarbon, ... " (column 4, lines 34-38). Since Smith discloses the same composition as claimed by applicants, then using Smith's composition in the same manner as claimed by applicants would inherently result in

A composition suitable for use in etching an insulative layer formed over a substrate in a semiconductor device, said composition comprising:

a flowing plasma etchant mixture consisting essentially of at least one fluorocarbon and ammonia, wherein said at least one fluorocarbon and ammonia form a reactive mixture, as recited **in claim 26**.

The above further reads on,

wherein said fluorocarbon is at least one member selected from the group consisting of fluorocarbons, **as in claim 27**;

wherein said fluorocarbon is at least one member selected from the group consisting of  $C_4F_8$ ,  $C_4F_6$ ,  $C_5F_8$ ,  $CF_4$ ,  $C_2F_6$ ,  $CHF_3$ , and  $CH_2F_2$ , **in claim 28**; and

wherein said fluorocarbon is at least one member selected from the group consisting of  $CF_4$ ,  $CHF_3$ , and  $CH_2F_2$ , **in claim 29**;

wherein said fluorocarbon is at least two members selected from the group consisting of and is a combination of  $CF_4$ ,  $CHF_3$  and  $CH_2F_2$ , **in claim 30**;

wherein said fluorocarbon is a combination of  $CF_4$ ,  $CHF_3$  and  $CH_2F_2$ , **in claim 31**.

Using Smith's etchants in the same manner as in the claimed invention would result wherein said composition is ineffective to remove side wall spacers of a gate formed over said substrate, **in claim 32**;

The above aforementioned also reads on,

A composition suitable for use in etching an insulative layer formed over a substrate in a semiconductor device, said composition consisting of:

a plasma etchant mixture consisting of  $\text{CF}_4$ , at least one other fluorocarbon, and  $\text{NH}_3$ . Since Smith discloses the same composition as claimed by applicants, then using Smith's composition in the same manner as claimed by applicants would result wherein said  $\text{CF}_4$ , at least one other fluorocarbon and  $\text{NH}_3$ , form a reactive mixture, as recited in **claim 71**.

The said aforementioned further reads on,

A composition suitable for use in etching an insulative layer formed over a substrate in a semiconductor device, said composition consisting of: a gaseous etchant mixture, consisting of at least one fluorocarbon and ammonia. Since Smith discloses the same composition as claimed by applicants, then using Smith's composition in the same manner as claimed by applicants would result wherein said at least one fluorocarbon and ammonia  $\text{NH}_3$ , form a reactive mixture, as recited in **claim 71**.

### ***Claim Rejections - 35 USC § 102***

3. Claim 77 is rejected under 35 U.S.C. 102(b) as being anticipated by Fumio et al. (JP 54054578).

Fumio teaches, "... using the plasma of mixed gases of  $\text{CF}_4$  and  $\text{NH}_3$  at the time of etching the PSG film and  $\text{SiO}_2$  film on Si substrates" (Abstract), which reads on,

A composition suitable for use in etching an insulative layer formed over a substrate in a semiconductor device, said composition consisting of:

A gaseous etchant mixture consisting of at least one fluorocarbon and ammonia, wherein said at least one fluorocarbon and ammonia form a reactive mixture.

***Response to Arguments***

4. Applicant's arguments, see Remark (pages 4-6 in Amendment), filed 8/3/2005, with respect to claims 26-32, 71, and 77 have been fully considered and are persuasive. The 102(b) rejection of the said claims 26-32, 71, and 77 has been withdrawn.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 571-272-1470. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Art Unit 1765

EXAMINER  
SUPERVISOR  
NADINE NORTON



ltue

October 13, 2005